REMARKS

Claims 1-26 are pending in the present application.

In the Office Action, claims 1-2, 4-8, 10, 13, 15, 17 and 20-26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mittag et al, U.S. Patent No. 6,477,195 ("Mittag") in view of Goss et al, U.S. Patent Application No. 3,258,328 ("Goss").

Claims 10, 13-19 and 20-21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Pantke et al, U.S. Patent No. 3,634,592 ("Pantke") in view of Goss.

Claim 9 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Mittag in view of Goss.

Claims 3 and 11-12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mittag et al in view of Goss and further in view of Reuter et al, U.S. Patent No. 3,379,426 ("Reuter").

Claim 11 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Pantke in view of Goss and further in view of Reuter.

Rejection under 35 U.S.C. § 103(a)

Claims 1-2, 4-8, 10, 13, 15, 17 and 20-26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mittag et al, U.S. Patent No. 6,477,195 ("Mittag") in view of Goss et al, U.S. Patent Application No. 3,258,328 ("Goss"). Claims 10, 13-19 and 20-21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Pantke et al, U.S. Patent No. 3,634,592 ("Pantke") in view of Goss. Claim 9 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Mittag in

view of Goss. Claims 3 and 11-12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mittag et al in view of Goss and further in view of Reuter et al, U.S. Patent No. 3,379,426 ("Reuter"). Claim 11 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Pantke in view of Goss and further in view of Reuter.

Mittag describes a process for melting down sponge iron where sponge iron 11 in lumpy form as pellets and/or briquettes and optionally, partly in the form of fines, is conducted into an electric-arc furnace 1 via chutes or slides 12. When falling onto a slag layer 8 near an electrode 6 inside the electric-arc-furnace, the falling sponge iron 15 forms the shape of a cone envelope. Oxygen for decarburination blown into the reactor 1 by oxygen lances 13 onto the slag layer 8 are shielded from the electrode 6 by the falling sponge iron 15. See Mittag, paragraphs [0011], [0020], [0021], [0028] and Figs 1-6.

Goss describes an apparatus for treating steel where deoxidizers, desulfurizing agents and purification agents are contained in a hopper 19 equipped with a chute 18 with an adjustable gate 23 attached to the hopper 19 arranged so as to cause a measured quantity of addition agents to fall continuously upon the point of entry of the molten metal stream into the molten metal 16 in the tap ladle 17. The chute 18 is adjusted so that the flux 21 will hit the surface of the molten slag 14 and join the stream of molten metal at the same point 22 on the surface of the molten metal 15 so as to be thoroughly mixed. See Goss, the Title, column 2, lines 47-60, column 3, lines 3-8 and Fig. 1.

Reuter describes a suction device for removing furnace gasses and ambient air from an electric arc furnace. See Reuter, column 1, lines 15-21 and column 3, lines 39-40.

Pantke describes a system for charging sponge iron into an electric arc furnace where a charging arrangement 5, 6 and 10 continuously introduces sponge iron into a furnace 1. The charging arrangement 5, 6 and 10 lead the sponge iron via chutes 11a and 12a to the charging openings/risers 4 which carry funnels 4a at their upper ends. See Pantke, column 4, lines 47-54, column 5, lines 21-24 and Fig. 1.

Independent claims 1 and 22 of the present application both recite a method in which a bulk material stream is passed through a dosing orifice to control a material flow rate so that "the bulk

material stream enters the furnace essentially undisturbed" and so that "the bulk material stream is not substantially enlarged during the fall onto the melt."

It is respectfully submitted that Mittag fails to disclose the features that the bulk material stream enter the furnace essentially undisturbed and that the bulk material stream is not substantially enlarged during the fall onto the melt, as recited in claims 1 and 22. In contrast, Mittag describes that post-combustion lances 13 are specifically arranged to disturb the falling sponge iron jet 15 by blowing oxygen into the falling sponge iron jet 15. See Mittag, paragraphs [0021], [0028] and Figs. 1-6. Even where the sponge iron jet 15 of Mittag is arranged vertically and centrally in a free fall, said falling sponge iron jet 15 forms, with its periphery in the form of a cone envelope, "a protective shield" between oxygen jets 14 of oxygen lances 13 and a part of electrodes 6. See Mittag, paragraph [0028]. Mittag describes as being "essential to the invention that sponge iron jet 15 between electrode 6 and oxygen jet 14 forms a protective shield which prevents immediate contact of the oxygen blown in with electrode 6." See Mittag, paragraph [0021]. Mittag further clearly describes that that the falling sponge iron 15 is substantially enlarged by forming in its periphery a "cone envelope" when falling. See Mittag, paragraph [0028]. This significant enlargement of the falling sponge iron is also clearly depicted as 15, the falling sponge iron jet, in Figs. 1-6. Goss does not cure this defect. In contrast, Goss specifically adjusts the chute 18 so that the flux 21 hits the surface of the molten slag 14 at the same point 22 on the surface of the molten metal 15 so as to be thoroughly mixed. See Goss, column 3, lines 3-8 and Fig. 1. Goss also contains no teaching that the bulk material stream is not substantially enlarged during the fall onto the melt, as recited in claims 1 and 22. It is much rather respectfully submitted that Fig. 1 of Goss shows an enlargement of the flux 21 falling onto molten melt 16. Therefore, a combination of Mittag with Goss, to the extent proper, could not render claims 1 or 22, or any of their respective dependent claims, obvious.

Claim 3 properly depends from claim 1. As stated above, none of Mittag or Goss disclose the features that the bulk material stream enter the furnace essentially undisturbed and that the bulk material stream is not substantially enlarged during the fall onto the melt, as recited in claim 1. Nor do Mittag or Goss suggest these features. Reuter does not cure this defect. Therefore, a

combination of Mittag and Goss with Reuter, to the extent proper, could not render claim 1 or its dependent claim 3 obvious.

Therefore, a combination of Mittag, Goss and Reuter, to the extent proper, could not render claims 1 or 22, or any of their respective dependent claims 2-9 and 22-26, obvious.

Independent claim 10 recites an electric-arc furnace having "a furnace roof being connected with a downpipe," "wherein at an opening of the downpipe into the furnace an adjustable dosing orifice is configured to control a flow of the material into the furnace."

It is respectfully submitted that none of Mittag, Goss, Reuter and Pantke teach or suggest a furnace roof being connected with a downpipe, wherein at an opening of the downpipe into the furnace an adjustable dosing orifice is configured to control a flow of the material into the furnace as is recited in claim 10. As noted by the Examiner, Mittag does not teach a dosing orifice. See Detailed Action, page 2, last line to page 3, line 2. None of Goss, Reuter or Pantke cure this defect. In contrast, Goss describes an adjustable gate 23/hopper 19/chute 18 arrangement which is not connected to the tap ladle 17, and where tap ladle 17 also lacks a furnace roof and is filled with metal tapped from the furnace 11 through spout 12. See Goss, Fig. 1. The gate 23 is furthermore provided between the hoper 19 and the chute 18 and not at the opening of the chute 18 into the tap ladle 17, much less at an opening of the chute 18 into the furnace 11 as is required by claim 10 of the present application. Goss therefore does not teach or suggest a furnace connected with a downpipe wherein at an opening of the downpipe into the furnace an adjustable dosing orifice is configured to control a flow of the material into the furnace as is recited in claim 10. Reuter describes two different types of shutters 60 and 61 which can be placed onto a nozzle 59 to meter the amount of gas and ambient air sucked into the nozzle <u>from</u> the electric-arc-furnace 1. See Reuter, column 3, lines 39-40, column 4, lines 46-55 and Figs. 12-14. Reuter therefore does not teach or suggest a furnace roof being connected with a downpipe wherein at an opening of the downpipe into the furnace an adjustable dosing orifice is configured to control a flow of the material <u>into</u> the furnace as is recited in claim 10. Pantke, in contrast, merely describes charging openings/risers 4 which carry funnels 4a at their upper ends at the opening of the downpipe. See Pantke, column 4, lines 49-50 and Fig. 1. Moreover, the charging arrangement 5, 6 and 10 in

Pantke is not located at the opening of the downpipe into the furnace; it is located above the funnels 4a. See Pantke, column 4, lines 44-54 and Fig. 1. Pantke therefore does not teach or suggest a furnace connected with a downpipe wherein at an opening of the downpipe into the furnace an adjustable dosing orifice is configured to control a flow of the material into the furnace as is recited in claim 10.

Because each of Mittag, Goss, Reuter and Pantke fail to teach or suggest at least the above-recited features of claim 10, any combination of these references, to the extent proper, could not render claim 10, or any of its dependent claims 11-21, obvious.

For the above reasons, reconsideration and withdrawal of the rejections of claims 1-26 under 35 U.S.C. § 103(a) is respectfully requested.

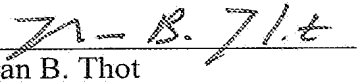
CONCLUSION

In view of the above amendment, applicants believes the pending application is in condition for allowance.

The Commissioner is hereby authorized to charge any unpaid fees deemed required in connection with this submission, including any additional filing or application processing fees required under 37 C.F.R. §1.16 or 1.17, or to credit any overpayment, to Deposit Account No. 04-0100.

Dated: July 28, 2009

Respectfully submitted,

By 

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